



Changes to Sand Skink Survey Protocol  
On April 4, 2011 by the U.S. Fish and  
Wildlife Service  
Impact Properties on Sandy Ridges of  
Interior Central Florida

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CHANGES TO SAND SKINK SURVEY PROTOCOL  
ON APRIL 4, 2011 BY THE U.S. FISH AND WILDLIFE SERVICE  
IMPACT PROPERTIES ON SANDY RIDGES OF INTERIOR  
CENTRAL FLORIDA

On April 4, 2011, the U.S. Fish and Wildlife Service published a revised sand and bluetail mole skink survey protocol, which will impact owners of properties in interior Central Florida. The known range of the sand skink includes Highlands, Lake, Marion, Orange, Osceola, Polk, and Putnam Counties with principal populations along the Lake Wales Ridge, the Winter Haven Ridge, and the Mount Dora Ridge. The habitat of the sand skink and bluetail mole skinks, threatened species under the Endangered Species Act, is affected by the conversion of citrus groves to pasture lands as well as to residential land uses. As a result, the new protocol (available at <http://www.fws.gov/verobeach/index.cfm?Method=programs&NavProgramCategoryID=3&programID=76&ProgramCategoryID=3>) is important in that it assumes that all contiguous sandy soils within 780 feet of a skink sign are occupied. A circle with a radius of 780 feet includes approximately 44 acres. The area of suitable soils within this circle is considered occupied if there are no physical barriers such as canals or paved roads which preclude skinks from accessing the suitable soils.

According to the revised protocol, if a property lies within the sand skink consultation area (see link), has an elevation of 80 feet above sea level, and contains sandy soils, the presence of sand skinks is *presumed*. The burden is on the property owner to document the *absence of* sand skinks.

If a property owner seeks to exclude the possibility of sand skinks on its property, it must conduct coverboard surveys to reach a “presumed absence” condition. This involves placing 40

coverboards (2' x 2' of 1/2" plywood) per acre on top of flat sandy soil in areas of bare sand or sparse vegetation adjacent to leaf litter or detritus. These surveys are only valid if conducted from March 1 through May 15, following the protocol set forth by the U.S. Fish and Wildlife Service. A coverboard survey of contiguous suitable soils within 780 feet of skink sign may not exclude the possibility of occupied habitat even if negative results are documented.

Mitigation costs for sand skinks approach \$60,000.00 to \$70,000.00 per impacted acre. Although land banks exist, in the current economic climate, it is possible that the finding of sand skinks will render properties unusable for present or future development. Therefore, it is expected that the value of land in these areas as collateral for loans will be similarly impacted. (Mitigation for impact through use of conservation banks that offer sand skink credits may be obtained from environmental engineering firms such as Modica & Associates.

[www.modicaandassociates.com](http://www.modicaandassociates.com) )

Several of our clients owning land in affected counties are seeking to cooperatively legally challenge this initiative or mitigate its impacts. If you wish to discuss the implications of this protocol to your property and your potential interest in participating in any challenge, please contact Dean Mead, Elias N. Chotas, Esq. (Orlando office), 407-428-5132, [echotas@deanmead.com](mailto:echotas@deanmead.com) or Dennis G. Corrick, Esq. (Fort Pierce office), 772-464-7700, [dcorrick@deanmead.com](mailto:dcorrick@deanmead.com).

## **Skink Survey Protocol**

April 4, 2011

Following the 5-year review for sand and bluetail mole skinks (Service 2007) and our assessment of the skink surveys to date, the Service provides this revised skink survey protocol for all counties in Florida in which they occur:

The three most important factors in determining the presence of skinks are location, elevation, and suitable soils. Sand skinks occur on sandy ridges of interior central Florida from Marion County south to Highlands County. The extant range of the sand skink includes Highlands, Lake, Marion, Orange, Osceola, Polk, and Putnam Counties (Christman 1988; Telford 1998). Principal populations occur on the Lake Wales Ridge, Winter Haven Ridge, and Mount Dora Ridge (Christman 1970; Christman 1992; Mushinsky and McCoy 1995). Bluetail mole skinks are only known to occur on the Lake Wales Ridge in Polk, Osceola, and Highlands Counties (Mount 1965; Christman 1978). These skink species are found in this geographic area typically at elevations 80 feet above sea level or higher. A reference map depicting the consultation area can be found along with this protocol on our webpage ([www.fws.gov/verobeach](http://www.fws.gov/verobeach)). Sand skinks are much more numerous, broadly distributed, and more easily detected than bluetail mole skinks. As such, sand skinks will be used as a proxy for both species in the counties in which they co-occur.

Once the location and elevation for a site has been determined to be within these parameters, then the soil types should be examined. Skinks are found in excessively drained, well-drained and moderately well-drained sandy soils. Suitable soil types include: Apopka, Arredondo, Archbold, Astatula, Candler, Daytona, Duette, Florahome, Gainesville, Hague, Kendrick, Lake, Millhopper, Orsino, Paola, Pomello, Satellite, St. Lucie, Tavares, and Zuber.

These soil types typically support scrub, sandhill, or xeric hammock natural communities, although they may be degraded by human impacts to overgrown scrub, pine plantation, citrus grove, old field, or pasture condition. Skinks have been found in all these degraded conditions where soil types are suitable regardless of vegetative cover (Pike et al. 2008). Thus, habitat condition is not important in determining whether a site is occupied by skinks.

When the location, elevation, and soil type are suitable and the action is proposed to disturb the soils on-site, then either: (1) a skink survey is necessary to determine if the site is occupied or (2) presence should be assumed and the appropriate avoidance, minimization, mitigation, or conservation measures should be implemented.

If presence of the species is not assumed, then a visual pedestrian survey to survey for skink tracks should be conducted first. This survey can be performed at any time of the year, but tracks are most detectable in the spring (March through May) and fall (October through November) (Ashton and Telford 2006; Pike et al. 2008b). We recommend an intensive pedestrian survey be completed during one of these periods prior to proceeding with a coverboard survey. Sand skinks leave a sinusoidal ("S"-shaped) track (Figure 1) at the surface that can be readily identified through a visual pedestrian survey. All open, exposed sandy areas on the property should be surveyed. The survey route (preferably global positioning system

[GPS] based) should be recorded and depicted in map form with all locations of skink sign (skinks or skink tracks) marked. A photo documentation log of the skink signs should also be maintained.

Provided the location and elevation meet the parameters described previously, the Service assumes all contiguous suitable soils within 780 feet of skink signs are occupied based on observed skink movement (Schrey et al. in press). To determine the occupied skink area, place a 780-foot buffer around all skink signs. The area of suitable soils within this buffer is considered occupied if no physical barriers (e.g., canals, paved roads, etc.) preclude skinks from accessing the suitable soils. A coverboard survey is not required if the site is determined occupied by the pedestrian survey.

If the pedestrian survey is negative or some portions of the site were determined not occupied, then a coverboard survey is necessary to reach a presumed absence conclusion. Prior to initiating coverboard surveys, we recommend contacting a Service biologist in the appropriate field office (Figure 2) to confirm survey dates, provide guidance on placement of the boards across the landscape, and determine if a site visit is appropriate to verify sampling protocol prior to initiating coverboard surveys.

Coverboard surveys should be conducted from March 1<sup>st</sup> through May 15<sup>th</sup>. Negative results obtained outside this period of time are not considered adequate to conclude the presumed absence of skinks. Surveys should be conducted a minimum of four times in consecutive weeks within the survey time period to conclude that skinks are not present. Coverboards must be lifted and checked for tracks a minimum of once per week.

Coverboards should be placed within suitable soil types at a minimum density of 100 coverboards per hectare (40 per acre). Coverboards should be located in areas of bare sand or sparse vegetation adjacent to leaf litter or detritus. Carefully rake or grade the soil to ensure full contact of the coverboard with the soil surface. Placement of soil from surrounding areas may be necessary under some coverboards where stems or roots preclude full contact of the coverboard with the soil surface. Certain conditions (overgrown scrub, old fields, pastures) may require vegetation to be removed to place sufficient coverboards. Xeric scrub habitat where skinks occur may also be occupied by rare, state and federally listed plants. While setting up coverboard surveys, minimize impacts to rare plant communities (For more information on plants, see <http://www.archbold-station.org/fai/species4.html#Plants>).

Coverboards should be 61 cm by 61 cm (2 ft by 2 ft) in dimension and may be constructed of 1.2 cm (0.5 in) or greater thick plywood, masonite, rigid insulation board (without metallic sheathing), or other rigid material of the same dimensions. Record the geographic coordinates of all coverboards. Coverboards should be allowed to acclimate for 7 days before the first sampling event. Check for tracks upon lifting each coverboard. The use of gloves during sampling is highly recommended as coverboards often attract venomous insects and reptiles. We recommend lifting the coverboards from the edge farthest from you to keep the coverboard between you and any potential threats. After checking for tracks and skinks, carefully smooth the soil surface with the edge of the coverboard and replace the coverboard. During each site visit, look for and record tracks in sandy patches between coverboard locations. Once tracks or

skinks are detected in an area, the survey can be concluded. Absence of skink signs from the pedestrian and coverboard surveys combined indicates a low risk of take. Do not leave coverboards in the field between sampling seasons as weathering can degrade the effectiveness of the boards to detect skink tracks (Pike et al. 2008).

A survey report that includes the following, as applicable, should be forwarded to the Service:

1. Project description of the action including site specific habitat and vegetative descriptions.
2. Soil map over a topographical map or aerial photograph of the project area including the path of the pedestrian surveys, coverboard locations, locations of skink signs, and the 780-foot buffer.
3. Photo documentation of tracks.
4. Field data sheets that include:
  - A. Survey dates with starting and ending times of all surveys conducted and personnel conducting surveys;
  - B. Weather conditions during all surveys, including average temperature, wind speed and direction, visibility, and precipitation;
  - C. Total number of skink tracks observed; and
  - D. All skink observations.
5. The following ArcGIS layer files in shapefile format that include accurate metadata (the preferred projection is Florida Albers NAD83 in meters):
  - A. Project boundary;
  - B. GPS locations of survey routes;
  - C. Coverboard Locations; and
  - D. Skink track/sign locations with 780-foot buffer.

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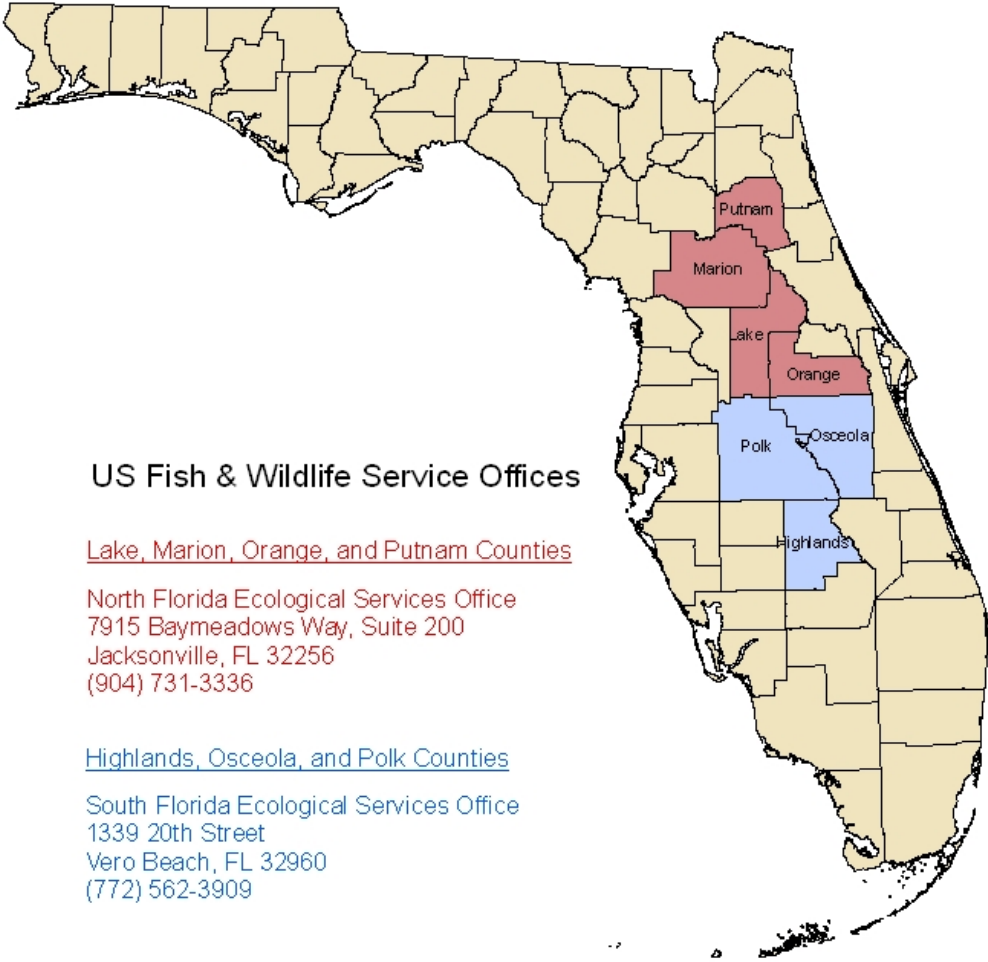
South Florida Ecological Services Office, Vero Beach, Florida [cited October 29, 2008].  
Available from: [http://ecos.fws.gov/docs/five\\_year\\_review/doc1071.pdf](http://ecos.fws.gov/docs/five_year_review/doc1071.pdf)



Figure 1. Typical “S”-shaped track of the sand skink (photographs courtesy of Randy Mejeur; Glatting Jackson Kercher Anglin Lopez Rinehart, Inc; 2000).



# Skink Counties of Occurrence in Florida



## US Fish & Wildlife Service Offices

### Lake, Marion, Orange, and Putnam Counties

North Florida Ecological Services Office  
7915 Baymeadows Way, Suite 200  
Jacksonville, FL 32256  
(904) 731-3336

### Highlands, Osceola, and Polk Counties

South Florida Ecological Services Office  
1339 20th Street  
Vero Beach, FL 32960  
(772) 562-3909

Figure 2. Skink survey protocol: US Fish and Wildlife Service areas of responsibility.

# Bluetail Mole and Sand Skinks

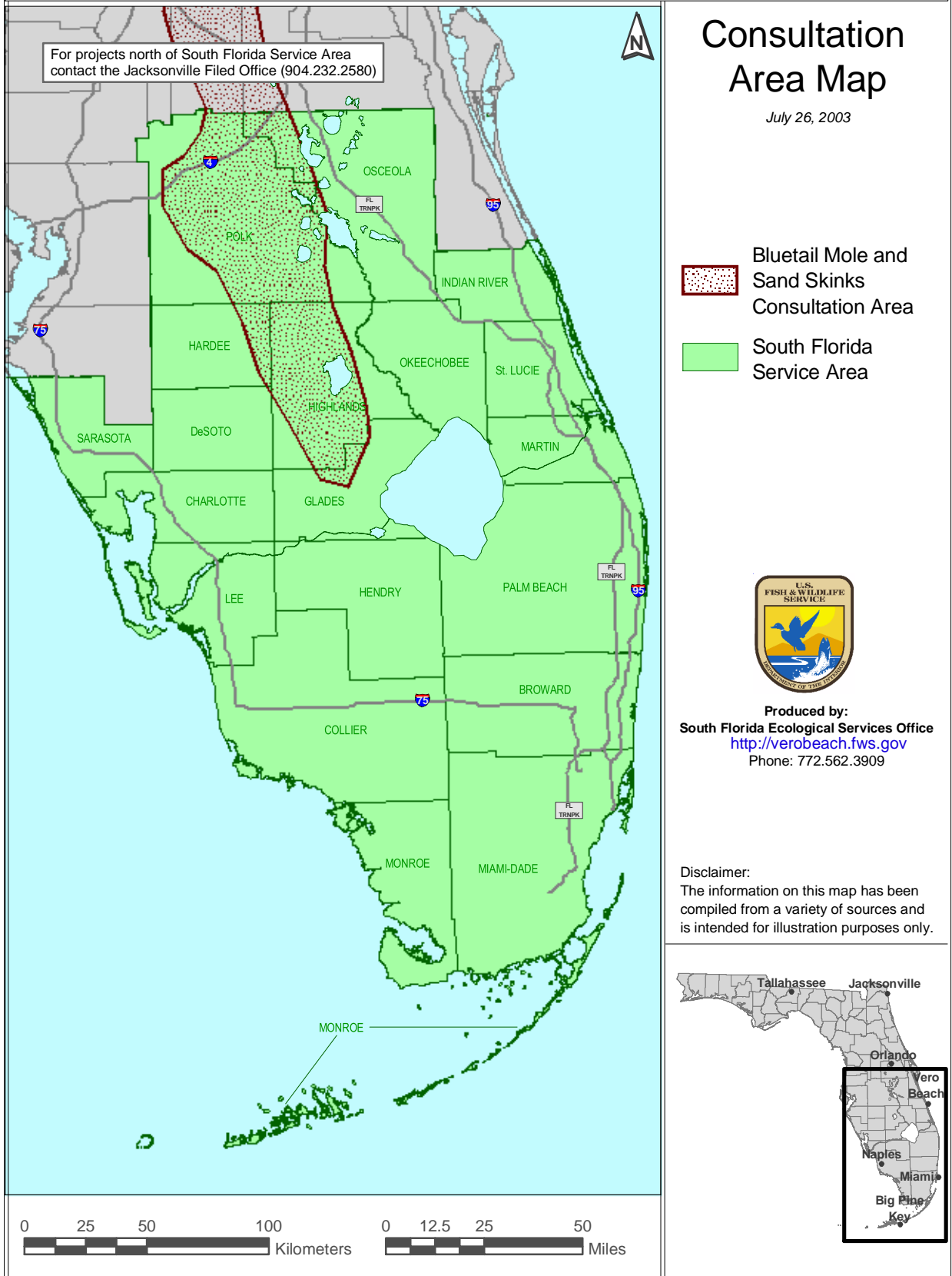


Figure 1.